

National Weather Service IMET Program



Julia Ruthford
Incident Meteorologist, NWS Portland, OR



The Mission of the National Weather Service

*" The National Weather Service (NWS) provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the **protection of life and property** and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community. "*

IMET Expansion: Vision and Mission

Vision for Services

“Dedicated, event-specific weather support for our interagency partners.”

Mission for Services

“NWS Incident Meteorologists provide emergency managers and incident commanders with dedicated on-site and remote weather support for wildland fire and other events of national significance.”

Incident Support Program

Product request

BOISE SPOT FORECAST REQUEST
Request Issues a RFD

PROJECT NAME:
Project Name:
WFO: ☐ WFO: ☐ HAZMAT
Requester:
Requester Title:
Requester Phone:
Requester Email:
Requester Address:
Requester City:
Requester State:
Requester Zip:
Requester Date:

REASON FOR SPOT REQUEST (select one):
☐ WILDFIRE (Federal, state, tribal, local agencies)
☐ Under fire line (USFS, BLM)
☐ State, tribal, or local emergency
☐ Current Hazardous Weather Event
☐ Request for spot forecast policy, see section 4.0 in NWS Instructions 10-801

LOCATION:
Lat: Elev:
Long: Dir:
7.5 Quad:
Elev (FT):
Name (City, State, Zip):

PRIMARY FORECAST ELEMENTS:
TDA INT TMD (Today, Tomorrow)
☐ Sky
☐ Temperature
☐ Humidity
☐ Wind
☐ Rainfall
☐ Other:

ADDITIONAL INFO:
Weather Safety
Preparedness
Education/Outreach
Weather Radio
Office Information
Code Observers
Contact us
Weather

Spectrum of Services

Web Briefing

Skywarn/EM Weather Briefing
Last briefing update: Thursday 8/02/2007 10:29 UTC

Spotter activation not expected today or tonight

SIGNIFICANT FLOODING REMAINS POSSIBLE THIS MORNING AND AFTERNOON WITH RAIN RATES NEAR 2 INCHES AN HOUR

HEAVY FLOOD THIS AFTERNOON

HEAVY RAIN WITH FLOODING THIS AFTERNOON

Hazardous Weather Outlook:
Issued at 5:02 AM CDT, Thu Aug 2, 2007

For Guadalupe Mountains of Eddy County, Eddy County, Central Lea County, Southern Lea County, Gaines, Daw, Martin, Howard, Mitchell, Van Horn, and Hobbs, NM, CO

Recorded Briefing

San Angelo, TX

Experimental Daily Multi-media Weather Briefing

The Daily Multi-media Weather Briefing is designed to be a briefing tool. The briefing will be updated with information concerning the latest forecast challenges, forecast uncertainty, and weather hazards. The idea is to give you more of the "Why?" of the forecast and any anticipated changes in the forecast for the following seven days. Click here for more information about the Multi-media Weather Briefing. Please let us know what you think about this product. Thank you!

The following are alternatives to the Multimedia Weather Briefing. Just click on the MP3 audio file. The Multi-media Weather Briefing uses the latest Flash player to download the latest Flash player for free here. Otherwise, just click on

Text Summary **Audio Only Briefing (*.mp3)**

RAINFALL ESTIMATES FROM RADAR (8/2/07)
--Will confirm with actual totals from rainfall observed this morning--

ISOLATED STORMS PRODUCED 1-3 IN. OF RAIN IN THE 1-3 IN. AREA

San Angelo, TX

Live Virtual Briefing

Regional Weather Outlook

Scattered Showers and T-storms Moving Southwest

9 AM

San Angelo, TX

Forecast Office

IC Center On-site

IC Incident On-site

Varies by office and depends heavily on available office resources

[Back to Portland Fire Weather Page](#)

PORTLAND SPOT FORECASTS

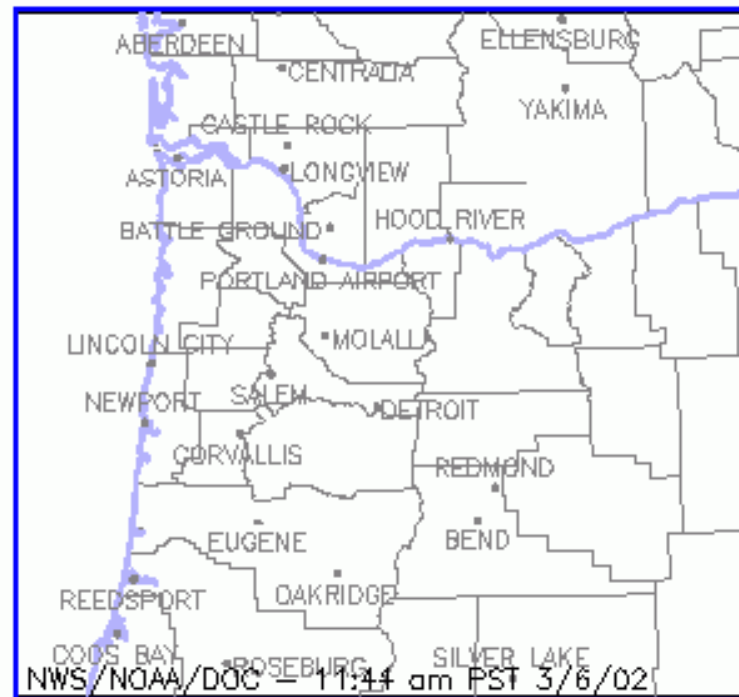
for

Wednesday

☐ **Mar 6 2002** ☐

[CALENDAR](#)

[Submit a new Spot Request](#)



Pending Question Complete

Name	Ignition Time	Status
No Entries		

<http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=pqr>



Page Author: Tim Barker

National Weather Service, NOAA

Page last updated at 9:20 am PDT 5/11/01

URL: <http://www.nws.noaa.gov/cgi-bin/nws/spot/spotmon>

<http://weather.gov/Portland>
Click Fire Weather on Left Menu

Portland Fire Weather Spot Request - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://spot.nws.noaa.gov/cgi-bin/spot/spotform?site=pqr

Customize Links Free Hotmail Windows Marketplace Windows Media Windows http://fire.boi.noaa.g...

PORTLAND SPOT FORECAST REQUEST

Required Elements in RED (*)

PROJECT NAME

(*)Project Name:

☐ Wildfire ☐ WFU ☐ HAZMAT

☒ Prescribed Fire ☐ SAR

Ignition Time:

Date:

☒ Pacific Local Time ☐ Mountain Local Time

REQUESTING AGENCY

(*)Requesting Agency:

(*)Requesting Official:

(*)Phone Number: Ext.

FAX Number:

Contact Person:

REASON FOR SPOT FORECAST REQUEST

☐ Wildfire

Non-Wildfire

☐ Under the Interagency Agreement for Meteorological Services (USFS, BLM, NPS, USFWS, BIA).

☐ State, tribal or local fire agency working in coordination with a federal participant in the Interagency Agreement for Meteorological Services.

☐ Essential to public safety, e.g. due to the proximity of population centers or critical infrastructure.

For NWS Spot forecast policy, see section 4.0 in NWS Instruction 10-401 at <http://www.nws.noaa.gov/directives/010/010.htm>

LOCATION

(*)Lat:

(*)Elevation: Top Bottom

(*)Lon:

Drainage:

7.5' Quad:

(*)Aspect:

Legal (T/R):

☒ OR ☐ WA

Size: (Acres)

FUEL

Type:

☐ Sheltering

☐ Full

☐ Partial

☐ Unsheltered

OBSERVATIONS

PRIMARY FORECAST ELEMENTS

TDA TNT TMR (Today, Tonight, Tomorrow)

☐ ☐ ☐ Clouds / Weather

☐ ☐ ☐ Chance of Wetting Rain

☐ ☐ ☐ Temperature

☐ ☐ ☐ Relative Humidity

☐ ☐ ☐ Eye Level Wind

☐ ☐ ☐ 20 Foot Wind

☐ ☐ ☐ Visibility

☐ ☐ ☐ Ceiling

☐ ☐ ☐ Swell Height

☐ ☐ ☐ Swell Period

☐ ☐ ☐ Wind Wave

REMARKS

Submit Request

Cancel Request

Clear Form

FORECAST:

IF CONDITIONS BECOME UNREPRESENTATIVE,
CONTACT THE NATIONAL WEATHER SERVICE.

SPOT FORECAST FOR RIGDON MEADOWS
NATIONAL WEATHER SERVICE PORTLAND OR
713 AM PDT MON SEP 8 2008

FORECAST IS BASED ON IGNITION TIME OF 1200 PDT ON SEPTEMBER 08.
IF CONDITIONS BECOME UNREPRESENTATIVE...CONTACT THE NATIONAL WEATHER
SERVICE.

.DISCUSSION...OFFSHORE FLOW PREVAILS ACROSS THE DISTRICT THIS
MORNING AS A THERMAL TROUGH EXTENDS NORTHWARD ALONG THE OREGON
COAST. HIGH PRESSURE WILL WEAKEN EAST OF THE CASCADES
TODAY...ALLOWING THE THERMAL TROUGH TO BUILD EAST OF THE CASCADE
CREST LATER THIS AFTERNOON. THIS WILL ALLOW OFFSHORE WINDS TO
EASE...EVENTUALLY GIVING WAY TO UP-RIVER WINDS LATE THIS AFTERNOON
AS THE THERMAL TROUGH AXIS SHIFTS EAST OF THE FIRE AREA. HOWEVER
THE GENERAL TREND TOWARD ONSHORE FLOW WILL BE SLOW TO BRING HIGHER
HUMIDITY AS FAR INLAND AS THE FIRE AREA...AND ONLY MODEST
IMPROVEMENT IN HUMIDITY RECOVERY IS EXPECTED TONIGHT VERSUS SUNDAY
NIGHT. MORE SIGNIFICANT IMPROVEMENT IS EXPECTED AS THE MARINE
INFLUENCE SPREADS FURTHER INLAND TUESDAY AND TUESDAY NIGHT.

CHANCE OF WETTING RAIN (CWR) 0.25 INCHES OR GREATER.
FORECAST WINDS ARE 10 MINUTE AVERAGES 20 FT ABOVE VEGETATION.
THUNDERSTORMS IMPLY GUSTY AND ERRATIC WINDS.

.TODAY...
SKY/WEATHER.....SUNNY.
CWR.....ZERO.
TEMPERATURE.....80-82 AT 1200 IGNITION TIME...MAX 84-88.
RH (%).....30-32 PERCENT AT IGNITION...MIN 23-25 PERCENT.
WIND (20 FT).....EAST WIND 5-10 MPH WITH GUSTS TO 20 MPH
EARLY...DECREASING AND BECOMING UPSLOPE 2-5
MPH BY 1100...THEN BECOMING WEST TO NORTHWEST
3-7 MPH WITH GUSTS 15 MPH AFTER 1500.
EYE LEVEL WIND.....EAST 2-5 MPH WITH GUSTS 12 MPH EARLY...
BECOMING UPSLOPE 0-2 MPH WITH GUSTS 5 MPH BY
1100...THEN BECOMING WEST TO NORTHWEST 1-4 MPH
WITH GUSTS 7 MPH AFTER 1500.

TIME (PDT)	10AM	11AM	12PM	1PM	2PM	3PM	4PM	5PM	6PM
TEMP.....	70	79	82	84	85	86	86	85	81
RH.....	39	32	29	27	25	25	28	30	33
20 FT WIND DIR..	E	S-SE	S-SE	SW	SW	W-SW	W	W-NW	W-NW
20 FT WIND SPD..	5-8	3-6	3-5	2-5	2-5	2-5	3-6	4-7	3-6
MAX GUST.....	15	12	10	8	8	10	12	12	10

.OUTLOOK FOR TONIGHT...
SKY/WEATHER.....MOSTLY CLEAR.
CWR.....ZERO.
TEMPERATURE.....FALLING THROUGH THE 70S AND UPPER 60S DURING THE
EVENING...OVERNIGHT MIN 52-56.
RH (%).....RECOVERING 35-45% DURING THE EVENING...
MAX 65-75 PERCENT.
WIND (20 FT).....WEST TO NORTHWEST 3-7 MPH WITH GUSTS 15 MPH...
DECREASING AFTER DARK AND BECOMING DRAINAGE
0-3 MPH.
EYE LEVEL WIND.....WEST TO NORTHWEST 1-4 MPH WITH GUSTS 7 MPH...
DECREASING AFTER DARK AND BECOMING DRAINAGE
0-2 MPH.

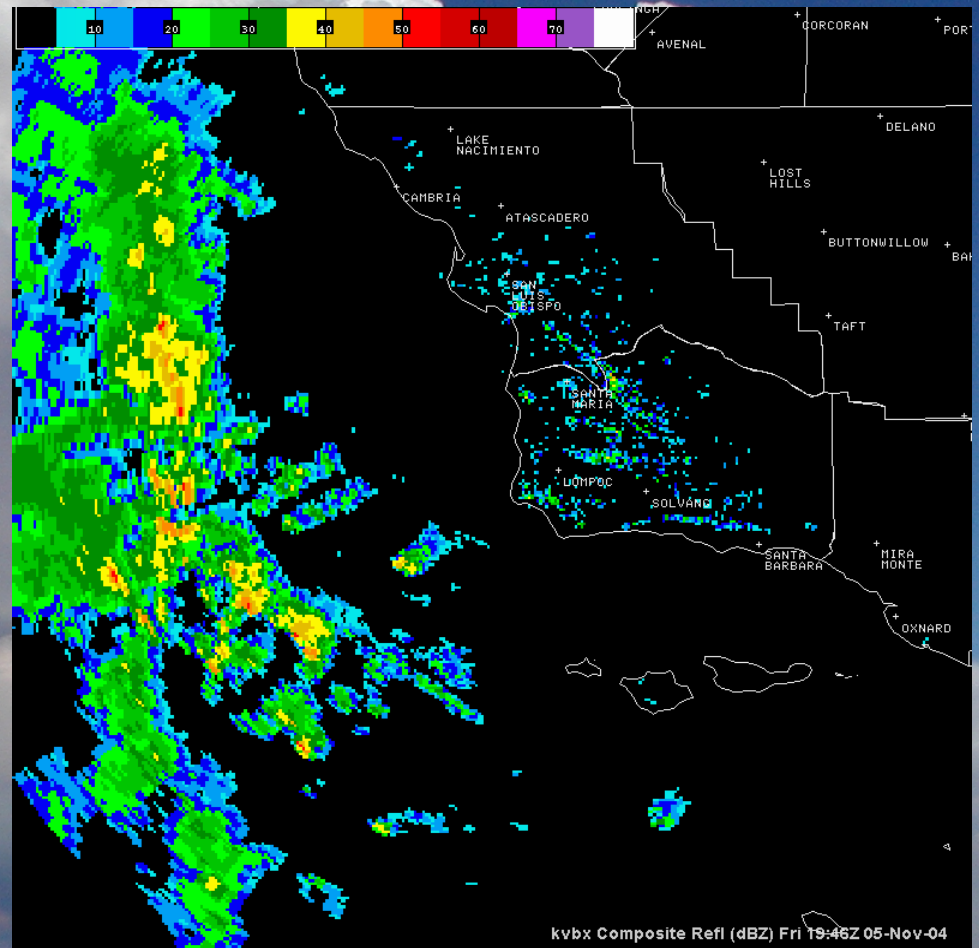
Please provide feedback:

[Printer Friendly Version of Forecast](#)

[Back to Sep 8 Spot List](#) [Back to Todays Spot List](#) [Copy Info to New Spot Request](#)

Incident Meteorologists - IMETs

- Best reason to have an IMET on scene – safety.
 - What's happening now?
 - What's going to happen in the near future that will help/hinder efforts?
 - How are the fire and weather going to interact?



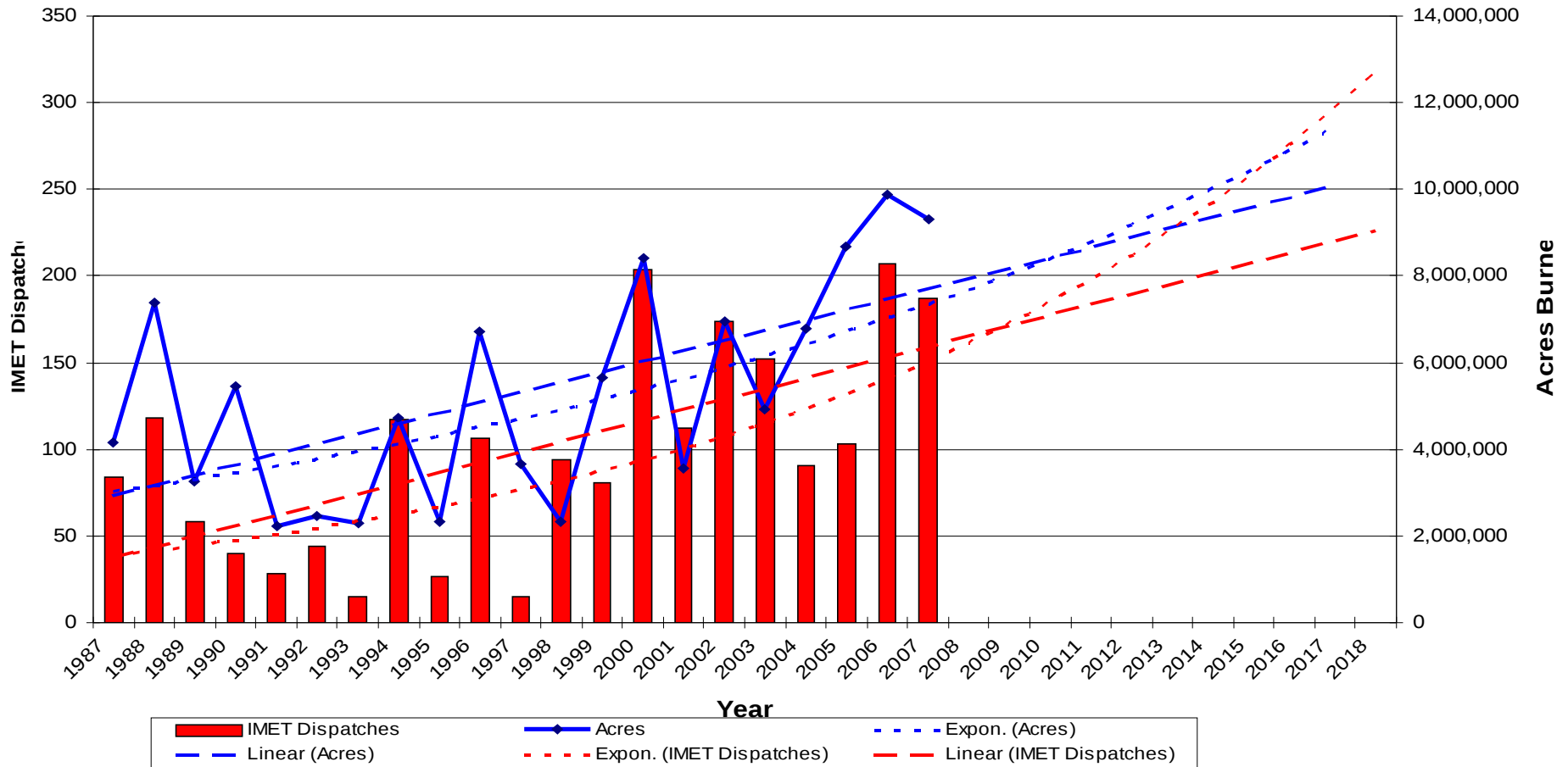
Incident Meteorologists

- Able to respond to over 70+ incidents nearly anywhere in the United States. Started in 1916.
- On scene within 24 hours
- Go to fires, wildfires or other "incidents" and brief the fire, air and rescue crews on the weather. Takes an area forecast office and arrives where the incident is taking place. (Meso and Micro Scale)

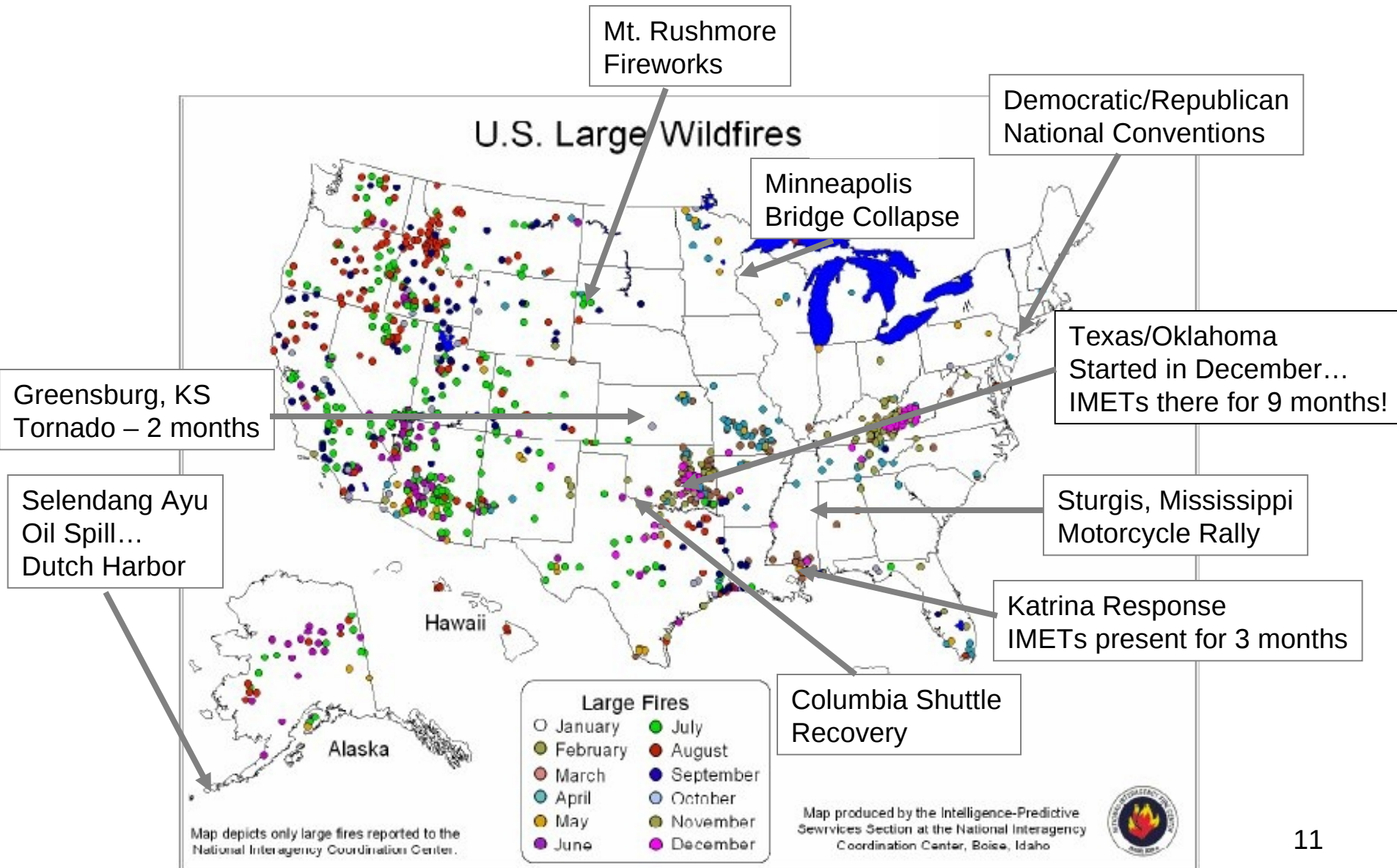


IMET Dispatches and Acres Burned

IMET Dispatches and Acres Burned



IMET Deployments



IMET Gear: AMRS

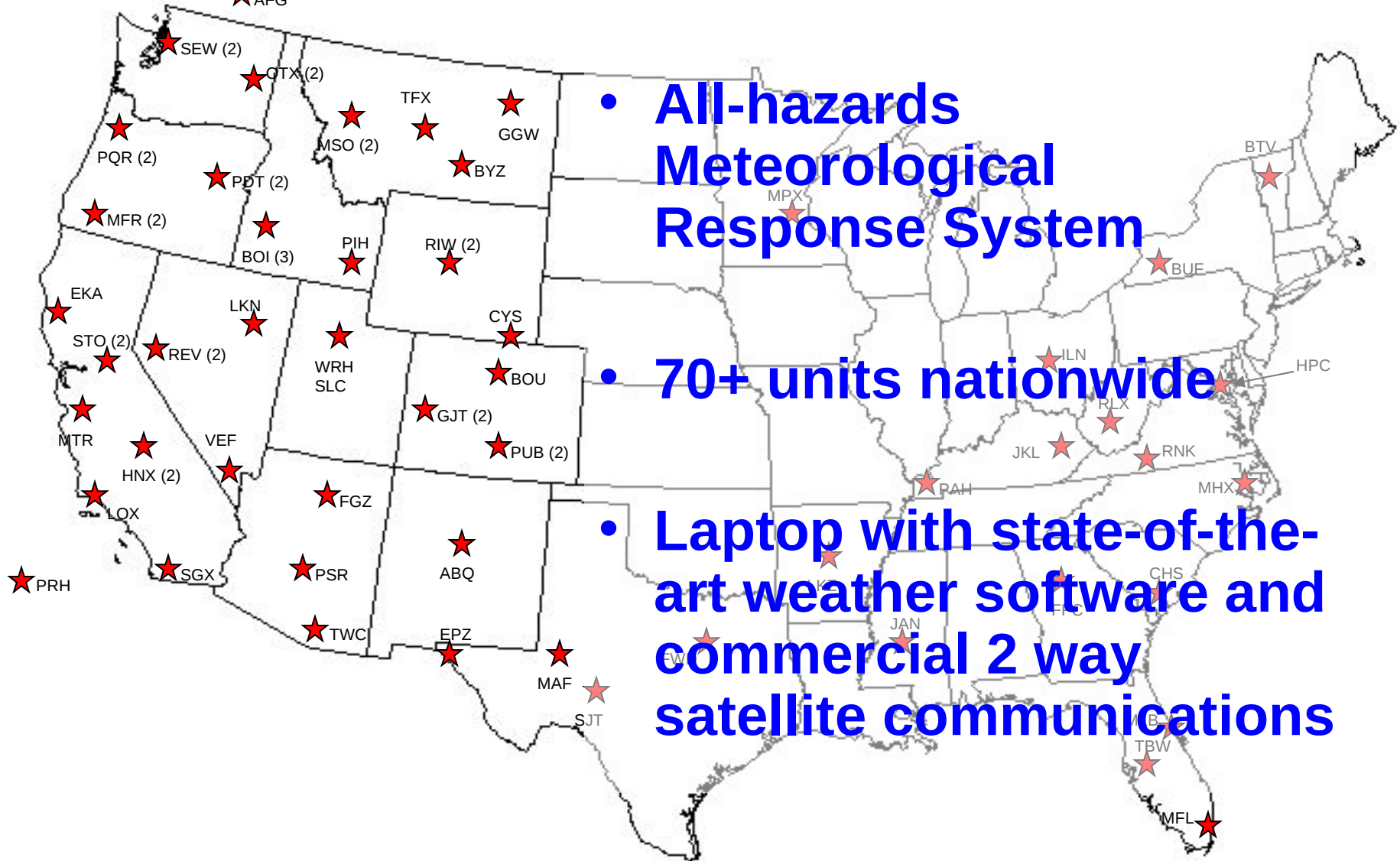
All Hazards Meteorological Response Unit

- Single Case
- Transportable
- Consists of Laptop & BGAN Satellite Dish
- Kestrel, Cell Modem & Phone, Printer, etc.



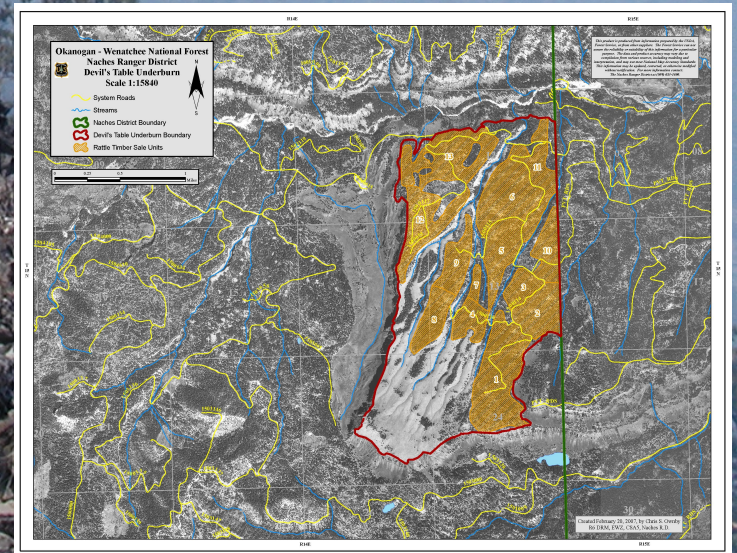
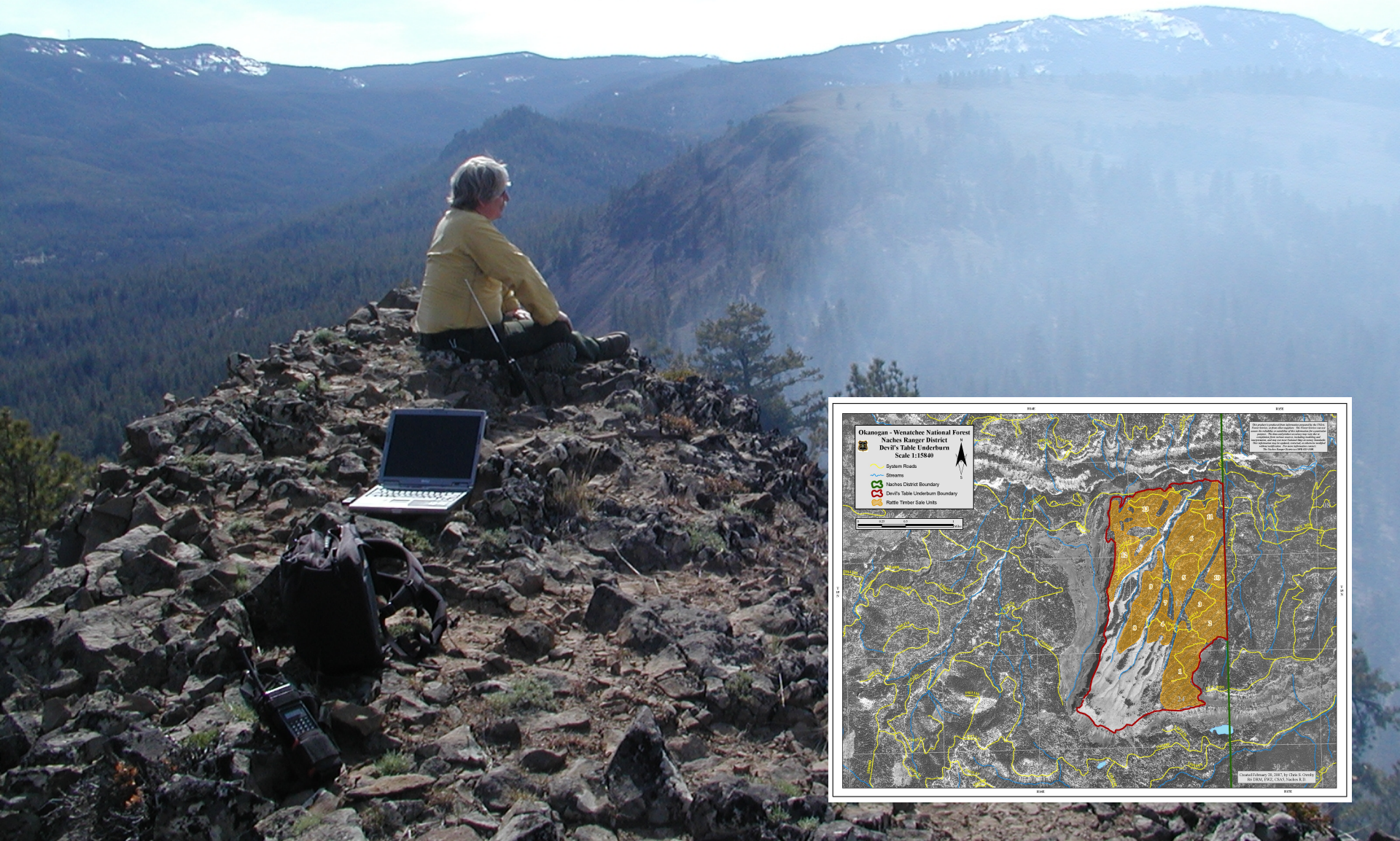
AMRS Locations 2008

★ AJK
★ AFC
★ AFG



- All-hazards Meteorological Response System
- 70+ units nationwide
- Laptop with state-of-the-art weather software and commercial 2 way satellite communications

Can Provide Remote on Site Weather Support With AMRS Unit Just About Anywhere



IMET Gear: ATMU

Atmospheric Theodolite Meteorological Unit

- Usually taken with IMET on local dispatches
- Otherwise must be ordered due to weight limitations ~ 145 lbs.
- Theodolite, Tripod, Regulator, etc
- Fire RAWS (Ordered Separately from Boise Cache)



So what is a Theodolite anyway?

❄️ Essentially it is a Transit (surveying telescope) and Pilot Balloon (Pibal)

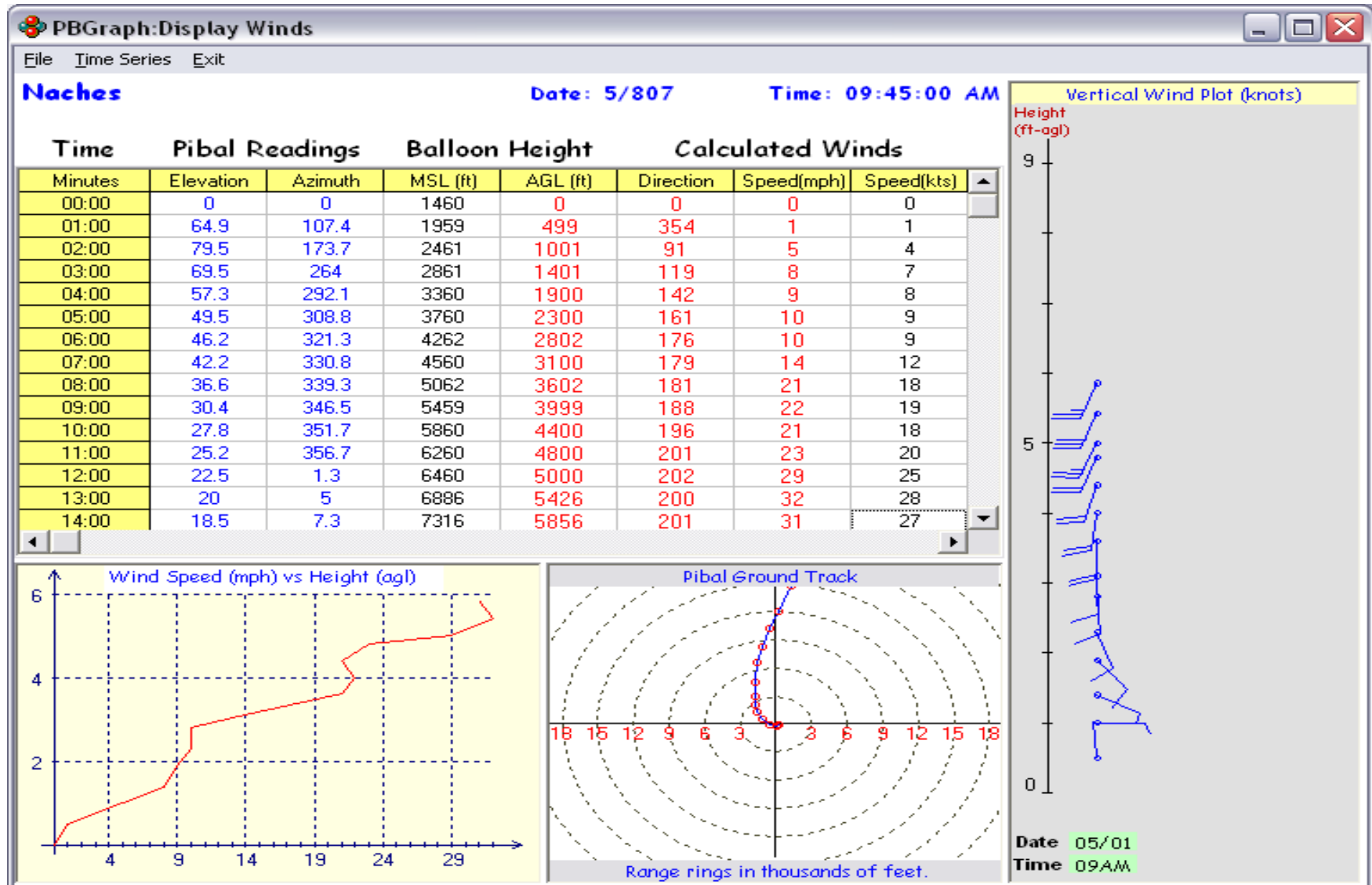
❄️ The Pibal rises at a set rate and by measuring its azimuth and angle you can calculate the winds aloft.

❄️ Very useful for wildland fires, prescribed burns or any application requiring detailed site specific winds or dispersion input.

Launching the Balloon



The Data – Fortunately the Computer does the Trigonometry



IMET FORECASTS



- Can be scheduled to meet the needs of the incident.
- Updates ALWAYS available.
- Special bulletins or alerts issued whenever conditions warrant.
- Integral part of the overall strategy.



IMET Forecasts

- Highly detailed forecast issued by onsite Incident Meteorologist.
- A “super” spot forecast tailored to meet the incident’s operational and planning needs.



FIRE WEATHER FORECAST

FORECAST NO. 5

NAME OF FIRE: KING COUNTY CREEK

PREDICTION FOR: Tuesday Day Shift

UNIT: Kenai - Kodiak Area Forestry

SHIFT DATE: Tue July 5, 2005

TIME AND DATE

FORECAST ISSUED: 2200 Mon 7/4/05

SIGNED: _____

Julia Ruthford
Incident Meteorologist

WEATHER DISCUSSION: Light southerly flow will shift to the northwest this afternoon and evening. A thermal trough will develop along the northern coast of the Gulf of Alaska on Wednesday...increasing northwest flow and warming temperatures. Conditions will continue to warm and dry through the end of the week.

TODAY:

WEATHER: Mostly clear through mid morning...then clouds developing with scattered showers possible in the afternoon.

TEMPERATURES: 70 to 75

MINIMUM RELATIVE HUMIDITY: 45% to 50%.

CHANCE OF FUNNEL CLOUDS: 0.001%

20 FOOT WINDS:

VALLEYS/LOWER SLOPES: SE winds 5 mph in the morning shifting to the W in the afternoon.

RIDGES: NW winds 10 mph.

SKILAK LAKE MARINE FORECAST:

WINDS ON THE LAKE: Light onshore winds in the morning...shifting to the W and increasing to 10 knots in the afternoon.

WAVE HEIGHT: Seas building to 1 ft through the afternoon.

CHANCE OF WETTING RAIN: 30%

LAL: 1

STABILITY/INVERSION: Unstable in the afternoon.

TONIGHT:

WEATHER: Decreasing Clouds.

TEMPERATURES: Lows 45 to 50.

MAXIMUM RELATIVE HUMIDITY: 70% to 80%.

20 FOOT WINDS:

VALLEYS/LOWER SLOPES: NW 5 mph.

RIDGES: N winds 15 mph.

SKILAK LAKE MARINE FORECAST:

WINDS ON THE LAKE: NW 10 knots.

WAVE HEIGHT: Seas 1 to 2 ft.

CHANCE OF WETTING RAIN: 10%

STABILITY/INVERSION: Very weak inversion forming overnight.

OUTLOOK FOR WEDNESDAY AND THURSDAY: Partly cloudy and warmer. Highs increasing to around 80. Lows around 55. Minimum relative humidities 35 to 40%. Northwest winds 5 to 10 mph.

OBSERVED WEATHER: Sunday 7/4/05

Skilak Guard Station RAWS: Min/Max Temp: 51/74°F Max/Min RH: 97/47% 24-hr Precip: 0.00 in

Kenai NWR RAWS: Min/Max Temp: 43/68°F Max/Min RH: 98/55% 24-hr Precip: 0.01 in

Div R: Max Temp: 71°F Min RH: 52% Light Rain

Div W: Max Temp: 68°F Min RH: 58%

Advantages of having an IMET on an Incident

- **IMET can get better weather observations at the incident.**
- **Forecasts adapted to local terrain.**
- **IMET works directly with fire behavior analyst and other sections of the team.**
- **IMET participates in briefings and strategy meetings.**
- **IMET helps train and position field observers. Also helps to locate portable RAWs stations.**

OTHER USES OF IMET FORECASTS



- IMETS now trained for all-hazards response.
- HAZMAT incidents, natural disasters, etc.
- Spray projects.
- Search and Rescue
- Marine Incidents
- Special Events of National Significance



Marine/Search and Rescue Support

- Detailed Marine Forecast Elements – winds, wind waves, swell, visibility, freezing spray.
- Air Operations support – ceiling, visibility, winds and temperatures aloft
- Mountain Rescue – Freezing/snow level, site specific winds, temperature, and other weather elements.

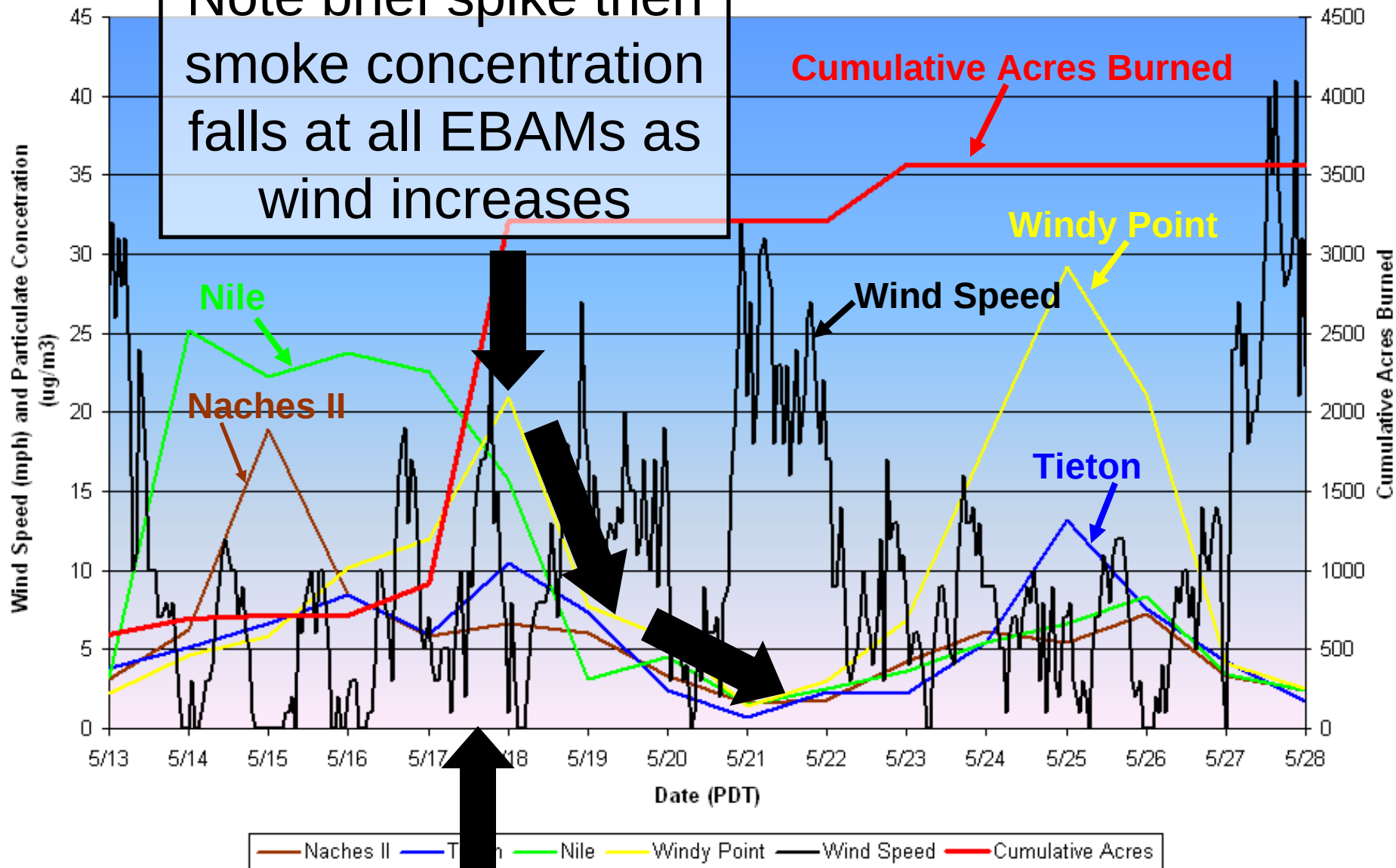


Non-Wildfire IMET Uses: Prescribed Burn Support



Sedge Ridge RAWS Winds Compared with EBAM Particulate Concentrations

Note brief spike then smoke concentration falls at all EBAMs as wind increases

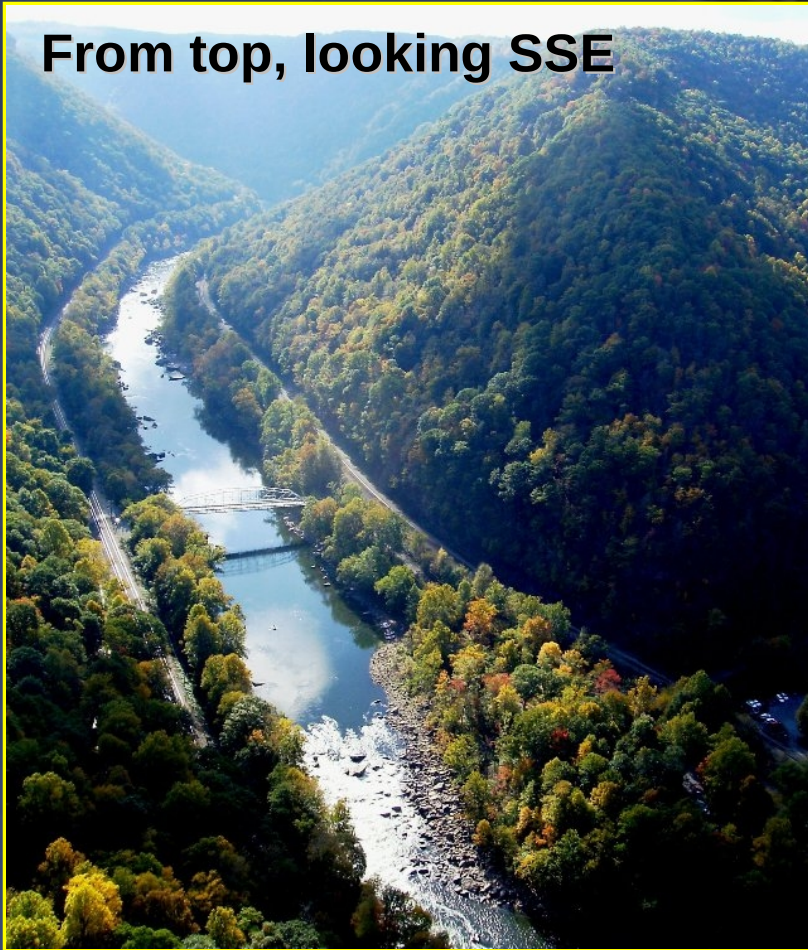


Ignition Time

Bridge Day: Background

- **New River Gorge Bridge (West Virginia)**

From top, looking SSE



- **986 ft. drop to river**
- **World's 2nd longest single arch bridge**

Bridge Day: IMET duties

MAIN CONCERNS

- **Critical Wind Threshold:** Event may be shut down if sustained > 15 mph
- **Visibility:** Near end of valley fog season... can't see, can't jump!
- **General Weather:** This is a huge public event, so weather impacts it greatly.
 - Set-up, tear-down, everything in between
 - Few years ago: Storms w/ hail + wind (next slide)



Exercise Support

- On-Site, Office or Spot Forecast Support
 - Canned or Actual weather
 - Tailored to exercise needs
- IMET, WCM, Hydrologist, etc.
- Few Hours to Several Days
- Participating in Local, Regional and National tabletop and onsite exercises (TOPOFF).

**For Information on How To get an IMET
deployed or get other weather support from
the Portland NWS:**

Contact

**Steve Todd (503) 326-2340
steve.todd@noaa.gov**



Questions?

